CECL: Determining Correct Segments for Loss Pooling

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Agenda

1. CECL is a Nutshell
2. What to Make of the New Timeline
3. Why you Should Segment Your Portfolio
4. The Risks of Over-Segmentation
What’s Changing with CECL?

Today’s Incurred Loss Approach vs CECL

<table>
<thead>
<tr>
<th>INCURRED LOSS</th>
<th>CECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognize losses when accounts exceed “Probable Threshold of Loss”</td>
<td>Estimate losses from loan origination</td>
</tr>
<tr>
<td>Estimate losses over “loss emergence” period</td>
<td>Estimate <strong>lifetime</strong> losses</td>
</tr>
<tr>
<td></td>
<td>- <strong>Forecast</strong> over reasonable &amp; supportable (R&amp;S) period</td>
</tr>
<tr>
<td></td>
<td>- <strong>Revert to history</strong> afterward</td>
</tr>
<tr>
<td>Rules-based, prescriptive</td>
<td><strong>Principles-based</strong></td>
</tr>
<tr>
<td></td>
<td>- Flexibility by portfolio size and complexity</td>
</tr>
<tr>
<td>Backward-looking</td>
<td><strong>Forward-looking</strong></td>
</tr>
<tr>
<td></td>
<td>- Remaining life</td>
</tr>
<tr>
<td>Requires <strong>transparency</strong> in assumptions</td>
<td>Requires <strong>transparency</strong></td>
</tr>
</tbody>
</table>

**Rules** - based, prescriptive

**Principles** - based

**Backward-looking**

**Forward-looking**

**Requires transparency** in assumptions

**Requires transparency**
CECL ‘Go Live’ Date for CUs is Now 2023
But Start Preparing TODAY!

– Implementations of CECL are taking time – collecting and understanding data requirements and gaps to create a reasonable estimate is KEY. CECL was finalized in 2016. SEC filers have had three years to accomplish CECL and still struggling.

– SEC filers (non-SRC) will produce CECL disclosures in six months. This will create tremendous pressure from regulators, auditors and the overall market.

– Most professional forecasters are predicting a turn in the economy. Preparing for CECL automatically prepares companies to answer questions about adequate allowance, profit and capital amounts.

– FASB wants entities to focus on CECL impacts “beyond the accounting” – CUs will have to understand all impacts of the CECL estimate and not just produce a CECL number.
• START TODAY!!
FASB Guidelines on Segmentation NOT Prescriptive

§326-20-55-5 In evaluating financial assets on a collective (pool) basis, an entity should aggregate financial assets on the basis of similar risk characteristics, which may include any one or a combination of the following (the following list is not intended to be all inclusive):

» Internal or external (third-party) credit score or credit ratings
» Risk ratings or classification
» Financial asset type
» Collateral type
» Size
» Effective interest rate

» Term
» Geographical location
» Industry of the borrower
» Vintage
» Historical or expected credit loss patterns
» Reasonable and supportable forecast periods.
Segmentation Considerations

» Intuitive to credit officers and lenders
» Portfolio Materiality
  – Total exposure ($) and potential for loss
  – Part of near-term strategy?
» Should be supported empirically (i.e., statistically linked to credit risk behavior)
  – Long-Run PD, EAD, LGD
» Available data
» Responsiveness to economic conditions
» Model complexity
  – exogenous vs. endogenous
Common Retail Product Segmentation

Default balances, $ bil, 12-mo MA

Sources: Equifax, Moody’s Analytics
Common Retail Product Segmentations

- **Auto / Recreational**
- **Card (Bank Card, Retail Card)**
- **Consumer Loans / Personal Finance**
- **Mortgage**
- **Home Equity**
- **Student Loan**

**Loans, Leases, New Car/Used Car, RV, Boat, Motorcycle**
- **Promo/Non-promo, Transactors/Revolvers, New/Existing Accounts, Secured/Unsecured**
- **Secured/Unsecured, Installment/Revolving**
- **First Lien/Second Lien, Fixed/ARM, Conforming/Non-conforming**
- **HELOC/HELOAN, First Lien/Second Lien**
- **Private/Gov’t, Different Repayment Plans, Refinance, Deferment, Forbearance**
Total Originations by Credit Score, mil accounts

Sources: Equifax, Moody's Analytics
Aggregate vs Vintage PD (%) for First Mortgage

Sources: RMBS, Moody’s Analytics
First Mortgage, Balance Concentration By Risk Band

Sources: Equifax, Moody’s Analytics

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First Mortgage, Loss Concentration By Risk Band

Sources: Equifax, Moody’s Analytics
First Mortgage ECL Rate (%), Credit Score 740-779

Sources: Equifax, Moody’s Analytics
Auto Lifetime Default Rate, % of $, Orig Vintage

Term length

Sources: Equifax, Moody’s Analytics

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ECL Volatility by Product Category

% difference between Moody’s S3 and S1 ECL, 19Q1 measurement

Sources: Equifax, Moody’s Analytics
## Distribution of 2010 Auto Loans by Risk Score and Term

<table>
<thead>
<tr>
<th>Score Band</th>
<th>MISSING</th>
<th>&lt;=24</th>
<th>25-39</th>
<th>40-63</th>
<th>64-75</th>
<th>76-84</th>
<th>85+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing</td>
<td>0.024%</td>
<td>0.140%</td>
<td>0.306%</td>
<td>0.563%</td>
<td>0.191%</td>
<td>0.009%</td>
<td>0.003%</td>
</tr>
<tr>
<td>300-529</td>
<td>0.059%</td>
<td>0.507%</td>
<td>1.191%</td>
<td>1.867%</td>
<td>0.824%</td>
<td>0.026%</td>
<td>0.023%</td>
</tr>
<tr>
<td>530-579</td>
<td>0.128%</td>
<td>0.694%</td>
<td>1.133%</td>
<td>2.423%</td>
<td>1.862%</td>
<td>0.048%</td>
<td>0.017%</td>
</tr>
<tr>
<td>580-619</td>
<td>0.160%</td>
<td>0.671%</td>
<td>1.156%</td>
<td>2.947%</td>
<td>2.818%</td>
<td>0.107%</td>
<td>0.018%</td>
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<tr>
<td>620-659</td>
<td>0.233%</td>
<td>0.712%</td>
<td>1.801%</td>
<td>5.143%</td>
<td>4.743%</td>
<td>0.268%</td>
<td>0.038%</td>
</tr>
<tr>
<td>660-699</td>
<td>0.225%</td>
<td>0.542%</td>
<td>2.064%</td>
<td>5.958%</td>
<td>4.984%</td>
<td>0.336%</td>
<td>0.051%</td>
</tr>
<tr>
<td>700-719</td>
<td>0.104%</td>
<td>0.213%</td>
<td>1.086%</td>
<td>3.210%</td>
<td>2.312%</td>
<td>0.171%</td>
<td>0.027%</td>
</tr>
<tr>
<td>720-739</td>
<td>0.104%</td>
<td>0.213%</td>
<td>1.263%</td>
<td>3.670%</td>
<td>2.307%</td>
<td>0.172%</td>
<td>0.026%</td>
</tr>
<tr>
<td>740-779</td>
<td>0.177%</td>
<td>0.380%</td>
<td>2.733%</td>
<td>7.471%</td>
<td>3.766%</td>
<td>0.257%</td>
<td>0.040%</td>
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<tr>
<td>780-809</td>
<td>0.136%</td>
<td>0.353%</td>
<td>2.730%</td>
<td>6.932%</td>
<td>2.724%</td>
<td>0.169%</td>
<td>0.029%</td>
</tr>
<tr>
<td>810-850</td>
<td>0.089%</td>
<td>0.318%</td>
<td>2.551%</td>
<td>5.484%</td>
<td>1.674%</td>
<td>0.086%</td>
<td>0.015%</td>
</tr>
</tbody>
</table>

Sources: Equifax, Moody’s Analytics
The Risk of Segmentation

» Segments with too few data will pick up noise, produce estimates which are not robust

» Trend appears in each segment, but disappears or reverses in the combined sample (Simpson’s Paradox)
Simpson’s Paradox

Chart 1: Different Slopes, Same Sign
Pooled regression: $y_{it} = a_0 + a_1 x_{it} + u_{it}$

True model: Segment 3
True model: Segment 2
True model: Segment 1

Source: Moody’s Analytics

Chart 2: Different Slopes, Different Signs
Pooled regression: $y_{it} = a_0 + a_1 x_{it} + u_{it}$

True model: Segment 1
True model: Segment 2
True model: Segment 3

Source: Moody’s Analytics
Conclusions

» CECL standards are not prescriptive

» Proper segmentation can improve forecast accuracy if model is constructed appropriately.

» Risk differentiation and economic responsiveness are key considerations when selecting a segmentation scheme.

» Choosing the best segmentation depends on many parameters: data availability, size and complexity of a portfolio, business needs, development, implementation and production cost, etc.
For More Information

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